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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BURCH, MELODY M

ART UNIT PAPER NUMBER

3683

DATE MAILED: 04/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/850,354

Applicant(s)

CROMBEZ ET AL.

Examiner

Melody M. Burch

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 7-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-12 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 4 is objected to because of the following informalities: the phrase "said first axle" in line 4 from the bottom should be changed to --said first wheeled axle-- to maintain consistent terminology. Also, the phrase "said second axle" in line 3 from the bottom should be changed to --said second wheeled axle--. Appropriate correction is required.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The originally filed specification lacks proper antecedent basis for the phrase "compression braking the first wheeled axle with the internal combustion engine up to the first level and above the first level of braking the vehicle" as claimed in claim 13. Examiner notes that in lines 22-26 of pg. 6 Applicant simply discloses that regenerative braking on the first wheeled axle occurs up to a first level and that if the vehicle requires braking above that level friction braking occurs above that first level to a greater second level.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5505527 to Gray, Jr. et al.

Re: claims 1-3. Gray, Jr. et al. show in the figure an electric vehicle disclosed in col. 6 lines 37-39 comprising: a first wheeled axle or axle on which wheels 10,11 are located exclusively only electrically driven (particularly, in the embodiment of the disclosure in col. 6 lines 37-39), the first wheeled axle exclusively having only electric regenerative brakes as disclosed in col. 5 lines 11-15, a second wheeled axle or axle on which wheels 40,41 are located, which is non-driven as disclosed in col. 4 line 19, and the second wheeled axle exclusively having only friction brakes as disclosed in col. 5 lines 3-4. With regards to claims 2 and 3, since front and rear are relative terms, the first wheeled axle may be considered either front or rear, as broadly claimed, depending on the direction of movement of the vehicle.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gray, Jr. et al. in view of US Patent 5589743 to King and US Patent 5469046 to Wong.

Gray Jr. et al. show and disclose a method of braking an electric vehicle disclosed in col. 6 lines 37-39 which has a first wheeled axle or axle on which wheels 10,11 are located exclusively only electrically driven (particularly, in the embodiment of

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the disclosure in col. 6 lines 37-39), the first wheeled axle exclusively having only electric regenerative brakes as disclosed in col. 5 lines 11-15, a second wheeled axle or axle on which wheels 40,41 are located, which is non-driven as disclosed in col. 4 line 19, and the second wheeled axle exclusively having only friction brakes as disclosed in col. 5 lines 3-4 the method comprising: sensing a headroom available for regeneratively braking the vehicle implicitly disclosed by Gray Jr. et al. by virtue of the sensing of the when the braking on the drive wheels 10,11 (which is regenerative as disclosed in the embodiment disclosed in col. 5 lines 11-15 and col. 6 lines 36-39) reaches the maximum P_{max} as disclosed in col. 5 line 43, electrically regeneratively braking the first axle to a first level P_{max} and frictionally braking the second axle to provide a braking force upon the vehicle greater than a braking force provided by the electric regenerative brakes as disclosed in col. 5 lines 43-46.

Gray Jr. et al. lack the limitation of dissipating power through a thermal resistor to provide additional regenerative braking for the vehicle.

King teaches in col. 4 lines 30-33 the use of the step of determining the headroom available for regenerative braking and dissipating power through a resistor to provide additional regenerative braking due to the newly created available headroom.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of braking of Gray Jr. et al. to have included the step of dissipating power to enable further regenerative braking, as taught by King, in order to provide an alternate efficient means of braking the vehicle when the vehicle demands braking increases beyond a certain level. The alternate braking

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means is efficient since it reduces the necessary amount of friction braking which helps to prevent shoe wear that may result from excessive friction braking.

Gray Jr. et al. lack the limitation of the resistor specifically being a thermal resistor.

Wong et al. teach in col. 1 lines 22-23 the use of thermal resistors. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the resistor of Gray Jr. et al., as modified, to have included a thermal resistor, as taught by Wong et al., in order to provide a means of protecting the device from damage due to excessive amounts of heat dissipation.

7. Claims 7, 9, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gray, Jr. et al. in view of US Patent 6383114 to Hoshiya et al.

Re: claims 7, 9, and 10. Gray Jr. et al. show in the figure a vehicle comprising: a first wheeled axle or axle on which wheels 10,11 are located exclusively only electrically driven (particularly, in the embodiment of the disclosure in col. 6 lines 37-39), the first wheeled axle exclusively having only electric regenerative brakes as disclosed in col. 5 lines 11-15, and a second wheeled axle or axle on which wheels 40,41 are located, the second wheeled axle exclusively having only friction brakes as disclosed in col. 5 lines 3-4. With regards to claims 9 and 10, since front and rear are relative terms, the first wheeled axle may be considered either front or rear, as broadly claimed, depending on the direction of movement of the vehicle.

Gray Jr. et al. lack the limitation of the second wheeled axle being driven by an internal combustion engine.

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Hoshiya et al. teach in the figure on the front of the patent the use of a second wheeled axle or axle on which wheels 66 and 68 are located being driven by an internal combustion engine 14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the second wheeled axle of Gray Jr. et al. to have been driven by an internal combustion engine, as taught by Hoshiya et al., in order to provide the vehicle with better traction advantage.

Re: claim 11. Gray, Jr. et al., as modified, teaches in the figure on the front of the patent of Hoshiya et al. the use of having a secondary electric motor generator 16 for powering the second wheeled axle. Such a modification would provide a level of redundancy in providing braking capacity to better ensure vehicle safety.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gray, Jr. et al. in view of US Patent 6383114 to Hoshiya et al. as applied to claim 7 above, and further in view of US Patent 6120115 to Manabe.

Gray Jr. et al., as modified, lack the limitation of the internal combustion engine being able to additionally compression brake the second wheeled axle.

Manabe teaches in col. 3 lines 7-9 the limitation of an internal combustion engine being able to additionally compression brake. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the braking means of Gray Jr. et al., as modified, to have included compression braking by the ICE on the second wheeled axle, in view of the teachings of Manabe, in order to provide a

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means of supplementing the existing braking mechanism to provide increased braking capacity to better ensure vehicle safety.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gray, Jr. et al. in view of Hoshiya et al., King, and Wong.

Gray Jr. et al. show and disclose a method of braking a vehicle having a first wheeled axle or axle on which wheels 10,11 are located exclusively only electrically driven (particularly, in the embodiment of the disclosure in col. 6 lines 37-39), the first wheeled axle exclusively having only electric regenerative brakes as disclosed in col. 5 lines 11-15, and the vehicle having a second wheeled axle or axle on which wheels 40,41 are located, the second wheeled axle exclusively having only friction brakes as disclosed in col. 5 lines 3-4 the method comprising: monitoring a headroom available for regeneratively braking the vehicle implicitly disclosed by Gray Jr. et al. by virtue of the sensing of the when the braking on the drive wheels 10,11 (which is regenerative as disclosed in the embodiment disclosed in col. 5 lines 11-15 and col. 6 lines 36-39) reaches the maximum P_{\max} as disclosed in col. 5 line 43, electrically regeneratively braking the first axle to a first level P_{\max} and frictionally braking the second axle when a braking requirement of the vehicle is above the first level as suggested in col. 5 lines 43-46.

Gray Jr. et al. lack the limitation of the second wheeled axle being driven by an internal combustion engine.

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Hoshiya et al. teach in the figure on the front of the patent the use of a second wheeled axle or axle on which wheels 66 and 68 are located being driven by an internal combustion engine 14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the second wheeled axle of Gray Jr. et al. to have been driven by an internal combustion engine, as taught by Hoshiya et al., in order to provide the vehicle with better traction advantage.

Gray Jr. et al., as modified, lack the limitation of the dissipating power through a thermal resistor to provide additional regenerative braking for the vehicle.

King teaches in col. 4 lines 30-33 the use of the step of determining the headroom available for regenerative braking and dissipating power through a resistor to provide additional regenerative braking due to the newly created available headroom.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of braking of Gray Jr. et al., as modified, to have included the step of dissipating power to enable further regenerative braking, as taught by King, in order to provide an alternate efficient means of braking the vehicle when the vehicle demands braking increases beyond a certain level. The alternate braking means is efficient since it reduces the necessary amount of friction braking which helps to prevent shoe wear that may result from excessive friction braking.

Gray Jr. et al., as modified, lack the limitation of the resistor specifically being a thermal resistor.

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Wong et al. teach in col. 1 lines 22-23 the use of thermal resistors. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the resistor of Gray Jr. et al., as modified, to have included a thermal resistor, as taught by Wong et al., in order to provide a means of protecting the device from damage due to excessive amounts of heat dissipation.

Response to Amendment

10. Upon further review of the prior art, the finality of the Final Office Action is withdrawn.

Allowable Subject Matter

11. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Gray, Jr. et al., as modified, lack the limitation of additionally compression braking the first wheeled axle with the ICE up to the first level and above the first level of braking of the vehicle. See specification objection above.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melody M. Burch whose telephone number is 703-306-4618. The examiner can normally be reached on Monday-Friday (7:30 AM-4:00 PM).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Lavinder can be reached on 703-308-3421. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mmb 4/14/04

mmb

April 14, 2004

Melody M. Burch
4/14/04